

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

REC'D 01 FEB 2006

PCT (WIPO) PCT

To:

see form PCT/ISA/220

PT13

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing

(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/IB2005/050941

International filing date (day/month/year)
18.03.2005

Priority date (day/month/year)
31.03.2004

International Patent Classification (IPC) or both national classification and IPC
G03F7/20, H05G2/00

Applicant

PHILIPS INTELLECTUAL PROPERTY & STANDARDS GMBH

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



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Adams, R

Telephone No. +31 70 340-3766



**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/IB2005/050941

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the International application in the language in which it was filed, unless otherwise indicated under this item.
☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
☐ a sequence listing
☐ table(s) related to the sequence listing
 - b. format of material:
☐ in written format
☐ in computer readable form
 - c. time of filing/furnishing:
☐ contained in the international application as filed.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/IB2005/050941

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	3-6,9-12
	No: Claims	1,2,7,8,13-15
Inventive step (IS)	Yes: Claims	
	No: Claims	1-15
Industrial applicability (IA)	Yes: Claims	1-15
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item V

- 1 The following documents are referred to in this communication:

D1 US 2004/032574 A1
D2 US 2003/053594 A1
D3 EP 1 211 918 A
D4 WO 01/95362 A
D5 US 2003/071979 A1
D6 US 2005/122491 A1
D7 EP 1 531 365 A

2 Independent claims 1, 7, 13, 14 & 15

- 2.1 The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of independent claims 1, 7, 13, 14 and 15 is not new in the sense of Article 33(2) PCT.
- 2.2 Document D1 discloses a high energy photon source contaminant barrier that contains all the features of claim 1 (the references in parentheses applying to this document), namely:

A method for removing (paragraph 0017) contaminant particles, such as atoms, molecules, clusters, ions and the like, produced by means of a radiation source (LA, paragraphs 0017 & 0052, figure 4) during generation of short-wave radiation having a wavelength of up to approximately 20 nm (implicit for discharge or laser-produced plasma sources as disclosed in paragraph 0052), by means of a first gas (the first gas in a mixture of inert gases as disclosed in paragraph 0066) guided at high mass throughput (implicit if the gas is to substantially impede the contaminant flow towards the illumination system - see paragraph 0065) between the radiation source (LA) and a particle trap (the tube 13 is a particle trap) arranged in a wall (see figure 4) of a mirror chamber (the chamber surrounding mirror MR - see figure 4), characterized in that a second gas (the second gas in a mixture of inert gases as disclosed in paragraph 0066)

is introduced into the mirror chamber (implicit since some of the gas introduced will flow in the mirror chamber - see figure 4) *and in that its pressure is adjusted such that it is at least as high as the pressure of the first gas* (it is implicit that one of the two gases in the mixture, which could be regarded as the second gas, would have a partial pressure which is at least slightly higher than the partial pressure of the other gas).

Therefore, **claim 1** is not novel. The same applies *mutatis mutandis* to **independent claims 7, 13, 14 and 15**.

3 Dependent claims 2 - 6 and 8 - 12

- 3.1 Dependent claims 2-6 and 8-12 do not appear to contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step, the reasons being as follows:
- 3.2 It is implicit that one of the two gases in the mixture, which could be regarded as the second gas, would have a partial pressure which is at least slightly higher than the partial pressure of the other gas. Thus **claims 2 & 8** are not novel.
- 3.3 It would be a matter of routine to add the gas curtain disclosed by D2 (paragraph 0045, figure 2) between the high energy photon source and contaminant barrier of D1 (see figure 4) in order to further diminish the number of contaminant particles reaching the mirror chamber. In this case, the first gas would now become the gas used by the D2 gas curtain. Furthermore, the nozzle 210 and diffuser 260 of D2 would have side walls which partially laterally bound a channel (i.e. path) along which the first gas flows. Thus **claims 3 & 9** are not inventive.
- 3.4 It would be a matter of routine to select Argon or Krypton as the first inert gas in the mixture of inert gases disclosed in D1 (paragraph 0066). Thus, **claims 4 & 10** are not inventive.
- 3.5 It would be a matter of routine to select Helium as the second inert gas in the mixture of inert gases disclosed in D1 (paragraph 0066). Thus, **claims 5 & 11** are not inventive.

3.6 It would be a matter of routine to provide means for controlling the flow velocity of the first and second gases. Thus **claims 6 & 12** are not inventive.

4 Documents D2 - D7

It is noted that documents D2 - D7 are also relevant as indicated in the search report.

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Box No. V Reasoned statement under Rule 43b/s.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	3-6,9-12
	No: Claims	1,2,7,8,13-15
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A method for removing (paragraph 0017) contaminant particles, such as atoms, molecules, clusters, ions and the like, produced by means of a radiation source (LA, paragraphs 0017 & 0052, figure 4) during generation of short-wave radiation having a wavelength of up to approximately 20 nm (implicit for discharge or laser-produced plasma sources as disclosed in paragraph 0052), by means of a first gas (the first gas in a mixture of inert gases as disclosed in paragraph 0066) guided at high mass throughput (implicit if the gas is to substantially impede the contaminant flow towards the illumination system - see paragraph 0065) between the radiation source (LA) and a particle trap (the tube 13 is a particle trap) arranged in a wall (see figure 4) of a mirror chamber (the chamber surrounding mirror MR - see figure 4), characterized in that a second gas (the second gas in a mixture of inert gases as disclosed in paragraph 0066)

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Therefore, **claim 1** is not novel. The same applies *mutatis mutandis* to **independent claims 7, 13, 14 and 15**.

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